Conduit® IP67 Base Station
MTCDTIP Hardware Installation Guide

Warning and Caution symbols mean potential danger. You are in a situation that could cause bodily injury. Before working on any equipment, be aware of hazards in the installation area and be knowledgeable about electrical circuitry. Be familiar with standard practices for preventing accidents.

For translations of key cautions and warnings, go to http://www.multitech.net/developer/bsestation.

WARNING: Only trained and qualified personnel should install, replace, or service this equipment. Installation must comply with local and national electrical codes.

- When installing or replacing the unit, the ground connection must always be made first and disconnected last.
- Do not work on the system or correct or disconnect cables during periods of lightning activity.
- This device is not designed or approved to be used in any Hazardous Locations. Do not install or operate device if area is known to be an explosive environment.
- Externally ground this equipment using a customer-supplied ground wire before applying power. Contact an electrician if you are uncertain that suitable grounding is available. Refer to installing the Ground Wire instructions.
- All wall mounting installations are subject to the acceptance of local jurisdiction.
- Do not locate antenna near overhead power lines or other electric light or power circuits, or where it can come in contact with such circuits. When installing the antenna, take extreme care not to come in contact with such circuits, because they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes.

CAUTION:
- Power over Ethernet (PoE) Certification does not apply or extend to voltages outside of standard PoE range. Any PoE voltages not defined by PoE standard are not covered by the Power over Ethernet (PoE) Certification.
- Ethernet port is not designed to be connected to a public Telecommunication (PSTN) or any other connection other than IEEE 802.3-at power over Ethernet devices.
- Do not remove product labels.

CAUTION:
- PoE power levels are not standard defined. Red or green.

Power: Do not attempt to disassemble the Base Station. There are no serviceable parts. Opening the enclosure without authorization may void the warranty.

Package Contents

Note: Package contents vary by model.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MTCDTIP Base Station</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Mounting bracket</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>M5 x 10mm screws, washers and split washers (shown in the mounting bracket)</td>
<td>4 each</td>
</tr>
<tr>
<td>4</td>
<td>⅛ x 1 inch screws and anchors</td>
<td>4 each</td>
</tr>
<tr>
<td>5</td>
<td>Hose clamps</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>GNSS antenna</td>
<td>1 with GNSS models only</td>
</tr>
<tr>
<td>7</td>
<td>LoRa antennas</td>
<td>1 or 2 depending on the model</td>
</tr>
<tr>
<td>8</td>
<td>LTE antennas</td>
<td>2 with LTE models only</td>
</tr>
<tr>
<td>9</td>
<td>Wi-Fi antenna</td>
<td>1 with Wi-Fi/Bluetooth models only</td>
</tr>
</tbody>
</table>

LEDs

<table>
<thead>
<tr>
<th>Label</th>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR</td>
<td>Power</td>
<td>Green when powered up.</td>
</tr>
<tr>
<td>ST</td>
<td>Status</td>
<td>Red with blinking green. These are user programmable.</td>
</tr>
</tbody>
</table>

Additional Documentation

For additional documentation including hardware specifications, PoE application notes, and steps for using AEP, mLinux, and LoRa, go to www.multitech.net/developer/bsestation. If this document has been updated, the update will be available at that location.

Safety Instructions

For safety and to achieve a good installation, please follow these safety precautions:

- Consider safety and performance when selecting an installation site. Remember electric power lines and phone lines look alike. Assume that any overhead line can cause bodily harm or death.
- Call your power company and ask them to look at your proposed installation. This is important if raising a mast or tower.
- When installing the device:
  - Do not use a metal ladder.
  - Do not work on a wet or windy day.
  - Dress properly—shoes with rubber soles and heels, rubber gloves, long-sleeved shirt or jacket.
  - If any part of the antenna system comes in contact with a power line, do not touch it or try to remove it yourself. Call your local power company. They will remove it safely. If an accident occurs, call for emergency help immediately.

IMPORTANT: Refer to Warnings and Cautions on the back page for additional information.
Requirements
In addition to the Base Station and included accessories, you will need:

1. PoE injector. For requirements, refer to Conduit IP67 Base Station PoE Application Note (S000678).
2. Cat 5 or greater Ethernet cable rated for outdoor use.
3. Micro SIM (3FF) card for LTE models. MultiTech recommends using a SIM card rated for the climate where the device will be installed.
4. 14awg or larger ground wire with a closed loop terminal. For details, go to Installing a Ground Wire in this document.
5. Phillips screwdriver.

Related Accessories
PoE injectors, higher gain LoRa antennas, lightning arrestors, and antenna accessories are available through www.multitech.com/ip67.

Note: All antennas can be directly mounted on the Base Station; however, you can mount LoRa antenna(s) up to 5 feet away from the Base Station if necessary for your location.

Installing a Micro SIM Card
To install a SIM card:
1. Remove the SIM/USB cover. The SIM holder is above the USB port.
2. Gently push the micro SIM card into the holder with the cut corner to the left and the SIM contacts facing towards the USB port as shown.
3. Reattach the plastic cover and tighten to 10.5 lbf.in (12 kgf cm).

Installing a Ground Wire
Proper grounding of the metal enclosure is required to ensure safety. There are two ground lugs and one ground screw located on the enclosure back as shown in the Baoei image (under Connector Locations). Connecting a ground lug to an earth ground is the recommended method. Refer to the National Electric Code or your local codes for additional information or contact a licensed electrician for assistance in grounding an installation.

Ground wire (not provided) must be suitable for outdoor location and meet a minimum wire gauge of 14awg or larger. Use the supplied ground screw to fasten wire.

- Ground wire terminal (not provided) must be closed loop (ring type, see image right) and corrosive free in design. Insert supplied ground screw to fasten wire.

You can use either ground lug with the ground screw to connect the ground wire to the enclosure.

Attaching the Mounting Bracket
To attach the mounting bracket to the Base Station:
- Attach the bracket to the back of the Base Station using the supplied screws and washers as shown (right).

Mounting on a Pole
To attach the Base Station on a pole:
- Attach the Base Station to the pole using the supplied hose clamps as shown below.

Mounting on a Wall
To mount the device on a wall:
- Use the four bracket tabs to attach the Base Station to the wall with the supplied screws and anchors as shown below.

Attaching Antennas
After mounting the Base Station:

Note: All antennas should be finger-tightened plus a quarter turn.

1. For LTE models, attach the LTE cellular antennas to the Cell (5) and Diversity (6) connectors on the bottom of the Base Station.
2. Attach the GPS antenna to the GPS (3) connector on the top of the Base Station.
3. For Wi-Fi/Bluetooth models, attach the Wi-Fi antenna to the Wi-Fi (2) connector on the top of the Base Station.
4. Attach the LoRa antenna(s) to the LoRa (1) and (4) connectors at the top of the Base Station. If only one LoRa antenna, install on LoRa (1) connector.
   - If attaching LoRa antennas away from the Base Station, go to Attaching LoRa Antennas via Cable.
5. Go to Connecting Ethernet for steps on connecting the Base Station to power and Ethernet.

Attaching LoRa Antennas via Cable
Recommended for this option: Lightning arrestor, coaxial cable, and mounting bracket for each LoRa antenna. Refer to Related Accessories for details.

After attaching other antennas:
1. Use an antenna hose clamp to attach the antenna bracket to a LoRa antenna.
2. Attach the lightning arrestor (optional) to the antenna as shown (right).
3. Attach coaxial antenna cable to the lightning arrestor.
4. For a pole mount, use hose clamps to mount the antenna mounting bracket to the pole.
5. For a wall mount, attach the antenna bracket to the wall using the four tabs on the bracket.
6. If you have a second LoRa antenna, repeat Steps 1–4 for the second LoRa antenna.

Connecting Ethernet
Note: This is an 802.3at Type 2 device. It needs a power input of at least 25W from standard 802.3at PoE input. For more information refer to the Conduit PoE Application Note (S000678) available at www.multitech.net/developer/basestation.

To connect your Ethernet cable and PoE injector:

1. Remove the sealing nut, clamping claw, and sealing insert.
2. Thread the Ethernet cable (not provided) through the sealing nut.
3. Wrap the sealing insert around the cable and the clamping claw over the sealing insert.
4. Plug the Ethernet cable into the Ethernet port.
5. Push the seal and clamping claw into the cable gland body.
6. Push the sealing nut over the insert and clamping claw and tighten on the cable gland body to 10.5 lbf.in (12 kgf cm).

Best Practices
We recommend covering all connections with a rubber insulating tape, such as 3M’s 130C. Although the Base Station is rated IP67, tapping provides additional protection against environmental particulates.

Next Steps
After connecting and powering up the Base Station, refer to Conduit Base Station IP67 Getting Started Guide (S000665) and related documentation available at www.multitech.net/developer/basestation.

Regulatory Information
This device complies with Part 15 of the FCC rules and with ICES-003 of Industry Canada for a Class A digital apparatus. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference that may cause undesired operation.

MultiTech declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. The declaration of conformity may be requested at https://support.multitech.com.